

**Amendments to the Claims:**

This listing of claims will replace all prior versions, and listings, of claims in the application:

**Listing of Claims:**

1.-10. (cancelled)

11. (currently amended) A method for transmitting a first and a second data signal ~~in~~as a polarization multiplex signal in an optical transmission system, the method comprising:

modulating at the transmitting end the first data signal onto a sideband of a first carrier signal to generate a first sideband modulated signal;

modulating at the transmitting end the second data signal onto a sideband of a second carrier signal, which has the same frequency or differs by a differential frequency ( $\Delta f$ ) from the first carrier frequency such that the spectra of the first and the second sideband modulated signals overlap, by which means the transmission bandwidth is reduced, to generate a second sideband modulated signal;

orthogonally polarizing the first and the second sideband modulated signals to each other;

combining the first and the second sideband modulated signals into ~~at~~the optical polarization multiplex signal;

transmitting the optical polarization multiplex signal;

feeding at the receiving end the transmitted optical polarization multiplex signal via a polarization control element to a polarization splitter, which separates ~~out the optical polarization multiplexed signal which was transmitted~~ into the first and the second sideband modulated signals;

converting the first sideband modulated signal to a first electrical signal and/or converting the second sideband modulated signal to a second electrical signal;

analyzing the first and/or the second electrical signal; and

dependent on the analyzing result, deriving at least one control signal for the purpose of controlling the polarization control element.

12-13. (canceled).

14. (currently amended) The method according to Claim ~~13~~11, wherein the differential frequency ( $\Delta f$ ) is greater than one ~~Gigahertz~~Gigahertz.

15. (currently amended) The method according to Claim ~~12~~11, wherein the sideband modulation is a single sideband modulation or a vestigial sideband modulation.

16. (canceled).

17. (currently amended) The method according to Claim ~~13~~11, wherein for a second carrier signal which differs from the first carrier signal by a differential frequency ( $\Delta f$ ), the spectral component of the first and/or the second electrical signal at the receiver is determined at the differential frequency ( $\Delta f$ ) ~~for the purpose of analyzing the first and/or the second electrical signal~~ controlling a polarization control element.

18. (currently amended) The method according to Claim ~~17~~14, wherein the amplitude of the first and/or the second electrical signal is controlled to a minimum at the differential frequency ( $\Delta f$ ).

19. (previously presented) The method according to Claim 11, wherein the first or second sideband modulated signal is delayed at the transmitting end for the purpose of decorrelation.

20. (currently amended) The method according to Claim ~~12~~11, wherein the first or second sideband modulated signal is delayed at the transmitting end for the purpose of decorrelation.

21-23. (canceled).

24. (previously presented) The method according to Claim 11, wherein for the purpose of distinguishing the first and second electrical signals, at least one pilot tone signal is superimposed at the transmitting end on the first and/or the second carrier signal or the sideband modulated signal.

25-27. (canceled).

28. (currently amended) The method according to Claim 11, wherein ~~for the purpose of distinguishing the first and second electrical signals~~ the first and second data signals are transmitted at different bit transmission rates.

29. (currently amended) The method according to Claim 11, wherein ~~for the purpose of distinguishing the first and second electrical signals~~ the first and second data signals are transmitted in different data formats.

30. (previously presented) The method according to Claim 11, wherein the optical transmission system is operated in wavelength multiplex mode.